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SCIENCE IN CANADA.

THE awakening from long indifference as to the constant wasting, from various causes, of the timber resources of this continent, which some dozen years ago gave rise to a series of forestry congresses, has produced a considerable mass of literature, mainly economic, but to some extent also scientific, in Canada as well as in the United States. Not only the Dominion, but the provincial authorities as well, took action on the matter for the purpose of at once arresting wanton destruction of still existing forests, of re-afforesting denuded areas and of planting trees in the scantily timbered region between the Great Lakes and the Rocky Mountains. Something has also been done in the introduction of varieties, for sanitary and ornamental uses, from the like climates of the Old World. The scientific societies have done their share in keeping alive the interest created by this far-reaching movement. The latest of the monthly meetings of the Natural History Society of Montreal was devoted to this subject, the Hon. J. K. Ward having read a comprehensive paper on 'Canada's timber resources and lumber industry.' Mr. Ward's paper was largely historical and economic. He gave an interesting sketch of the lumber business from the year 1667, when the first timber ship was despatched from Canada to Europe; spoke of the relations between lumbering and colonization and touched on the great wealth of precious timber growing in Canada west of the Rockies. The lecture was scientific indirectly only and in its suggestions.

In view of the agitation for the admission of the island of Newfoundland into the Dominion, it may be of interest to recall that Mr. B. L. Robinson and Mr. Hermann Schrenk, of Harvard University, made a botanical exploration last July and August through the Exploits Valley and other parts of that island. They obtained

more than 7,000 specimens of flowering plants and vascular cryptogams, as well as (incidentally) a number of thallophytes. What is especially noteworthy, as parallel phenomena are well known in Canada, is that though the Exploits Valley is more than 200 miles north of St. John's it 'showed a richer and more advanced vegetation, indicative of a deeper soil and milder climate.' The report was published in the *Harvard Graduates' Magazine*.

A society that is destined to give a fruitful impetus to botanical research in the Dominion is the Botanical Club of Canada, which originated in a recommendation of the Fourth Section (Biology and Geology) of the Royal Society of Canada, at the annual meeting held in Montreal, in May, 1891. It is, however, entirely independent of that Society, with which it holds only the relations common to the other associated scientific societies of the Dominion. "The objects of the Club are to adopt means, by concerted local efforts and otherwise, to promote the exploration of the flora of every portion of British America, to publish complete lists of the same in local papers as the work goes on, and to have these lists collected and carefully examined in order to arrive at a correct knowledge of the precise character of our flora and its geographical distribution." This Club comprises Newfoundland (as does the Royal Society of Canada), not only in the scope of its operations, but by official representation. Prof. George Lawson, Ph. D., LL. D., of Halifax, N. S., is president; Dr. A. H. MacKay, B. Sc., Halifax, is general secretary-treasurer. Prof. D. P. Penhallow, B. Sc., McGill University, is secretary for the province of Quebec; Dr. J. A. Merton Wingham, for Ontario; Dr. A. H. MacKay, for Nova Scotia; Mr. G. U. Hay, M. A., Ph. D., St. John, for New Brunswick; Mr. Francis Bain, North River, for Prince Edward Island; Rev. A. C. Waghorne, St. John's,

for Newfoundland; Rev. W. A. Burman, B. D., Winnipeg, for Manitoba; Mr. T. N. Willing, Calgary, for Alberta; Rev. C. W. Bryden, Battleford, for Saskatchewan; Mr. A. J. Pineo, B. A., High School, Victoria, for British Columbia. The foregoing officers were elected on the 25th of May, 1894.

An interesting report of the work of the year 1893-94 was presented at last year's May meeting of the Royal Society at Ottawa, and is published in the *Proceedings*. What is most striking in it is the evidence which it affords that the creation of the Society has proved an incentive to increased industry in field work in distant and out-of-the-way places—in Newfoundland (special attention being called to Mr. Waghorne's work), in the Territories, in British Columbia and on Prince Edward Island. In British Columbia 100 members had been enrolled through Mr. Pineo's efforts, and 1,400 species (of which 30 were new) collected under the direction of Prof. Macoun. In Nova Scotia the work was largely associated with phenological observations. Besides excellent local work, the operations in Ontario included a series of papers by Mr. James Macoun on the plants in the Herbarium of the Geological and Natural History Survey at Ottawa, which appeared in the *Canadian Record of Science*. In Quebec the most important work done was that of Prof. Penhallow, in the determination of the species of American Coniferae by the structure of the stem, a research of recognized importance in the development of phanerogamic botany. In all the provinces the creation of the Club has already had a marked educational effect, the more intelligent teachers in many localities having engaged with energy in the work. Before the formation of the Club the only Canadian institution whose operations covered the Dominion was the Survey just mentioned, to the botanical work of which Mr. Robinson makes laudatory mention in his Ex-

ploits Valley report. In all the older provinces, however, there have long been scientific societies of whose objects botanical exploration formed a leading feature.

The gift by Mr. W. C. McDonald, of Montreal, of thirty-five acres of convenient and suitable land for the formation of a Botanic Garden in connection with McGill University, must very materially aid in the promotion of botanical research in Montreal and will prove a prized boon to Prof. Penhallow and his students. This gift, the deeds for which were formally signed on the 3d inst., is only one of many substantial proofs that Mr. McDonald has given of his interest in scientific education. At the convocation of the University on the 30th ult. the vice-principal was able to announce that, during the session just closing, the students had for the first time surpassed the thousand. That this augmentation is largely due to the increased attendance of the Scientific Faculties (medicine, comparative medicine and applied science) is an open secret. Ten years ago the attendance did not reach five hundred. As the vice-principal (Dr. Alexander Johnson) pointed out, increase of numbers, though desirable, is not the *summum bonum*. He hoped the time would come when all graduates would be first of all graduates in arts. Prof. Callendar, without decrying Latin or Greek, deprecated the neglect by scientific students of their mother tongue, which every student of science should be able to write correctly and clearly.

Professor Bovey, D. C. L., M. Inst. C. E., Dean of the Faculty of Applied Science, after saying that the students enrolled in his Faculty this year numbered 187, an increase of 15 per cent. over the previous year, mentioned among recent improvements a course in Kinematics (Professor Nicholson); the addition of practical mining and underground surveying to the course in Mining Engineering (Professor

Carlyle); the establishment of graduates' courses and arrangements made to facilitate the prosecution of research work, so as to take advantage of the splendid equipment for that end now possessed by the University. This consists of laboratories of mathematics and dynamics, fully provided with instruments of measurement, gravity balances, machines for experimenting on the laws of motion, etc.; three chemical laboratories for qualitative and quantitative work and for original investigation, and supplied with Becker & Son (4) and Bunge (1) balances; a Trøemner bullion-balance; a Laurent polariscope, Dubosq spectroscope, etc.; the McDonald physical laboratory of five stories, each 8000 square feet area, including elementary and special laboratories for heat and electricity; rooms for optical work and photography; two large laboratories arranged for research, with solid piers and the usual standard instruments, etc.; the electric laboratory, with Kelvin electric balances, a Thomson galvanometer, two dynamo-meters (Siemens), voltmeters, ammeters, etc.; the magnetic laboratory, the dynamo room, the lighting station, the accumulator room, geodetic, hydraulic testing, thermo-dynamic and mechanical laboratories. The McDonald Engineering Building and its equipment were the gift of the same generous friend of scientific education whom McGill University has just thanked for its botanic garden. Mr. McDonald also contributed liberally towards the erection of the workshops built on the endowment of the late Thomas Workman, merchant, of Montreal. These consist of machine shop, foundry, smith shop and carpenter, wood-turning and pattern-making departments, and are intended, under the direction of the professor of mechanical engineering, to familiarize the student with the materials and implements of construction.

Although Prof. Milne (whose recent loss every friend of science deplores) and other

seismologists are wont to class the earth movements of the United States and Canada under a common head, Canada has had a fair proportion of such disturbances all to herself. Every student of Canada's annals has had his attention drawn to the series of earthquakes which caused such consternation in the year 1663, and its extraordinary moral effects. On the 17th ult. a shock varying from severe to slight or barely perceptible was felt on both sides of the St. Lawrence, though mainly on the south side in what are called the Eastern Townships. Nearly two years ago a somewhat similar shock was felt, and nearly at the same hour, between eleven and noon. This earthquake was distinctly felt in Montreal. The most formidable visitation of the kind in recent times occurred twenty-five years ago. It cleared even the court rooms and filled the streets with frightened groups.

The Royal Society of Canada met at Ottawa on the 15th inst. A programme of considerable scientific interest was gone through.

The death of Mr. Walter H. Smith, well known in Montreal for more than twenty years as an astronomer and publisher of Smith's Planetary Almanac, is sincerely regretted by all who knew him. He was for many years connected with the *Montreal Witness*, in which paper his contributions on astronomical subjects were always read with interest, and were widely reproduced. He died on the 3d inst., in his forty-third year. He was a native of Wiltshire, England, but had lived more than half his life in Canada.

J. T. C.

CARL LUDWIG.

WITHIN a few months Germany and the world have lost three great men, Helmholtz, Freytag and Ludwig. Of these three Carl Ludwig, the physiologist, and the intimate friend of the other two, died in Leipzig on April 27th, 1895, at the age of